





Coll. 482 (5)

1877-79

1885-87







Fort Bridger, Wyoming T. July 24, 1877

In water from a pool with abundance  
of *Foraminalis*.

*Diffugia pyriformis*  of coarse stony.

*Diffugia globularis*  of yellowish  
particles and siliceous grains

*Diffugia manusiformis*  of same  
construction as last. common, of coarse stony.

*Diffugia* with trilobate mouth. of stony.

Also a variety as represented in figure of  
July 24 composed of thin transparent plates of  
various forms & sizes, with double outlined dotted  
intervals. See account of July 30th.

*Echinopuffis* of several varieties

*Arella vulgaris*. Hemispherical form  
with cupped depressions, various shades of  
color, common. No tubercles round mouth.  
*Arella* of discoid form and large mouth.  
concave beneath and strongly rounded margin.  
Common.

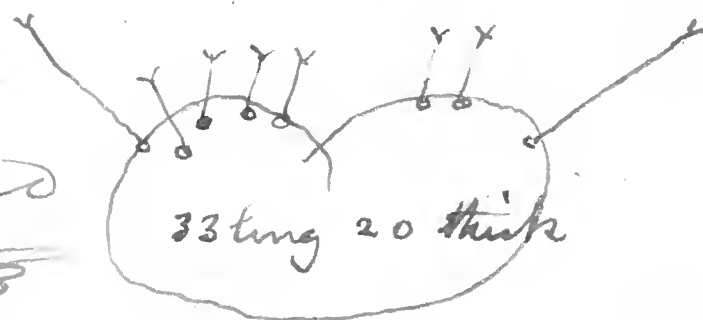
*Cyphoderia margaritacea*.

*Euglypha alveolata* - spineless

*Trinema acinus*.

July 25. *Echinocyrtis viridis*. In same water as before. Fine green color and active movement. Individual No 1. Appeared only to have one kind of spines, and these the long ones which appear scarcely fuscate at the free end. The spines were thickly covered and clean at base. Body slightly changed in form from the sphere. Indiv. No 2 Similar but with the spines more distinctly fuscate.

An empty skin discovered as represented in figure:



Colorless thickly covered with short fuscate spines about 4 long and the fuscation 1 diameter, the fewer and longer spines from 10 to 15 with fuscation about half extent of small ones. Disks at base scarcely 1 in diameter. No 7 S. H.

A second observed, oval 30 by 20 with spines as in former.

Arcella vulgaris, Hemispherical cupped on surface 13 wide & high, mouth 3 high & 3 wide with No 7. Common form. Various hues of brown.

*Amoeba* - limax like  20 by 10.

no nucleus observable. In progression the pseudopod appeared as abrupt hernia-like protrusion first on one side & then the other of the fore part & then in advance. Vacuoles confined to posterior two thirds.


Entosome finely granular with cramer ones, and also darkly defined oil-like globules scattered throughout.

*Amoeba zonalis* observed.

*Lecythium hyalinum*? 8-8- at position of mouth 4 wide, mouth **I**? nucleus 4? includes  $1\frac{1}{2}$  dark granules at middle of entosome  $\frac{1}{2}$

Frequently large globular masses of sarcode protruded from mouth containing vacuoles & fine granules.

Fig. 1 of July 25. As first seen. Middle space of entosome with a zone of darkly colored granules  $\frac{1}{2}$  diam. Protruded sarcode with large vacuoles, which changed from time to time. Fig. 2 had a smaller ball of exuded sarcode. Fig. 3. The protruded ball of sarcode gradually enlarged to size of the parent, and then contained four large vacuoles from 3 to 4 diam. also an oval one in neck, which became pear shaped and finally spherical as it was extruded from the parent into the protruded sarcode. The latter enlarged so as to exceed parent measuring 9 its vacuoles diminished to 3 large ones, of which largest was 6 diam another 5 & the other 4.

Cyphoderia. with  test about half occupied by sarcoid the fungus of which attached by a single thread unsymmetrically on one side as in outline.

July 26. <sup>Acanthocypris</sup> ~~Echinocypris~~ shell. See drawing. It was crowded with long and short furcate spines. Ovoid, whitish 35 by 25, contained a few scattered green grains about 1 diam. Also an oval ovum-like body 19-9 with faint reddish brown granular contents.


A heliozoon in all respects resembling Acanthocypris viridis, but with the spines not distinctly ending in a forked manner. They appeared thickened at end but not furcate. Another heliozoon of globular form, soft, finely granular and faintly reddish aspect 5 diam. with few delicate soft rays as long or  $1\frac{1}{2}$  times as long as diameter of body. Near it any relationship with the ovum like body above mentioned.

Gorycia, Pampagus observed. Could detect no contractile vesicle.

Trinema acinus, Individual seen with an internal ovum like body, covered with scales similar to that previously seen in Erythraea alvoluta.



Euphypha alveolata. Frequent, very much abundant form. Small variety and spinelless, usually with two intermediate points to mouth. Often with an appearance of scales within around the pointing the nucleus. A fragment of a test clearly exhibited the constituent scales as oval  $2 \text{ by } 1\frac{1}{2}$ .

Diffugia acuminata  not infrequent, of coarse stromes. Small form  $25 \text{ long } 13 \text{ broad } + 8 \text{ at mouth}$

Diffugia pyriformis with green interior and built of coarse stromes.

D. globularis with large diatoms attached.



D. vulgaris. Oval  $15 \text{ by } 13$  mouth 4 circular

pseudopods to  $25 \text{ long by } 1 \text{ wide}$ .



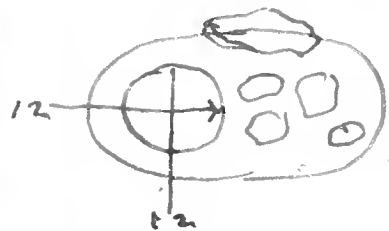
A smaller one  $11 \text{ long } 9 \text{ wide}$  and 3 at circular mouth

D. marsupiformis




$30 \text{ long } 20 \text{ high}$

$19 \text{ long at base mouth } 12$



$30 \text{ by } 20 = \text{of large and small stromes}$ .

Arcella  Concavo-convex discoid  $28 \text{ broad } 6 \text{ high mouth } 3 \text{ high } 11 \text{ broad}$ . no tubercles around mouth. Appeared to have several nuclei and many contractile vesicles.

Another  $25 \text{ broad } 7 \text{ high}$  - mouth  $3 \text{ high } 10 \text{ wide}$ , no tubercles. Another  $23 - 7$  mouth  $3 \text{ high } 8 \text{ wide}$ .

Euglypha globosa - Oval form

Amoeba radiosa

Amoeba resembling A. quadrilincata without  
lines 12 by 8 cont. ves. 3. Ectosome advancing  
the ectosome rolls in concert extending adaxially  
 $\frac{4}{5}$  length, & consists of fine granules with scattered  
oil like globules. Nucleus not determined.

Amoeba. Linear like  25 by 10 in

front & 4 behind. nucleus 2, vacuoles 1 to 2

c.v. pointing to 3. With posterior minute villi

1 long & very persistent.




Amoeba quadrilincata? With a pair of lines only.

July 27th.

Euglypha alveolata. Two spineless individuals  
observed, each closed with an operculum  
and containing an ovum like body. The  
oral cone covered like the test itself. The  
globular body within enclosed in a membrane,  
had uniformly granular contents.

E. alveolata An empty test 18 by 9 and 5 at  
mouth with 3 intermediate points or apparently  
eight in all. As in all others thus far observed  
spineless. The second row of scales denticulate  
like the first row.

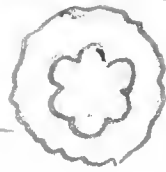
Euglypha compressa, with lateral spines.

*Diffugia globularis* - Hemispherical form   
 yellowish granules and quartz particles 9 broad  
 7 high - and 7 wide below (with  $2\frac{1}{5}$ ).

July 28th.

*Diffugia acuminata*. Of coarse and fine stones  
 58 long 25 broad near fundus, 18 at mouth:

*Diffugia* with six-lobed mouth



frequent. 30 long 25 broad mouth 10



Pseudopods three or more 30 or more long by 2 wide  
 Several individuals 33 long 28 wide mouth 12.

*Diffugia* with trilobate mouth



oval, large stones to mouth with

internals

filled with small ones. 35 long 25 broad 10 at

mouth. Lot of large and small stones, but  
 surface rather even.

25 by 2



coarse

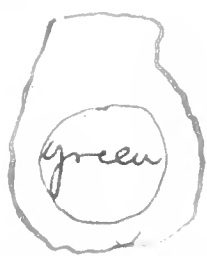
*Diffugia pyriformis*, of remarkably  
 stones, thus three only across neck.

30 long 24 broad and 10 at mouth end. Stones 4 & 5.

Surface within fundus appears bright  
 green

on 22-23-E. also of large stones

Diffugia subpyriformis. not uncommon



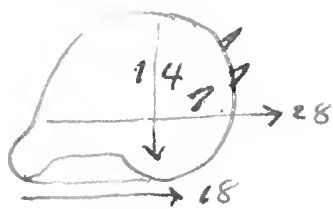
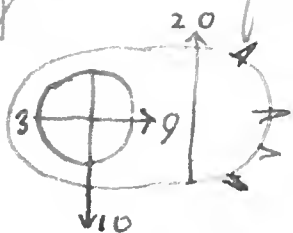
27 long 20 wide neck 4 long 11 wide

of coarse and finer stipes.

unsymmetrical.

Diffugia - of stipes and dirt.

28 long



Orange colored Heliozoon - See drawing of date.

Body 11, colorless lines 1, ordinary rays length of diameter of body, projected over about  $3/4$  periphery; from the other part projected sucker rays, 1 to 3 long - suckers about  $1/2$  diam. Sucker rays moved in and out rather quickly and animal moved in opposite direction or in that of position of ordinary rays. Slight change of form of body from round to oval etc. Orange colored interior finely granular. No vacuoles or contractile vesicles observed. Ordinary rays few.

Actinophrys col. Frequent, with large vacuoles, diatoms as food, etc.

An individual observed, see drawing, 14 diam rays to 15 numerous. Body finely granular with no visible vesicles or vacuoles. C.V. 5 at base 2 is high from surface before it collapsed.

A green heliozoan, like *Schweydtia*, but the rigid rays not prolate. See drawing.

Body 12 rays 7 numerous, green granules at h 1.

Another individual smaller with body 7 & rays about same.

A similar in structure seen, but devoid of the green granules. See over leaf.

*Amoeba quadrilincata* observed  10 by 6

The contractile vacuole 3 changing in form as usual in movement of animal.

July 29<sup>th</sup>

*Actinophrys rot.* See drawing. In state of dissolution. The drawing represents appearance when first observed, excepting that the nucleus was not so distinct. The animal was motionless and the vacuoles appeared almost stationary but several appeared slowly to expand & become more prominent from the periphery. Only five rays could be detected in different foci. After an hour the whole thing including all the vacuoles had collapsed and shrunk except the nucleus which then became very distinct & presented appearance seen in drawing. It appeared to contain a central



nucleus. The rays have also disappeared.

Body at first measured 20; the vacuoles from 4 to 7. The nucleus measured scant 6, the nucleolar shade or spot 2. The nucleus appeared uniformly granular. (No 75.H)



Leptothoe - Usually with the pedunculus more or less abruptly narrowed. The figure is the common form. Usually from 25 to 30 long 11 to 12 broad with mouth 5. Mostly yellowish, sometimes completely colorless.

Intestines test replete; mostly only partially filled. Vacuoles from 2 to 3 abundant towards the mouth.

White Echinogaster like Helicogaster with stiff but not prominent rays. See figure 9. July 29. Body 7 dir diam.

Actinosphaera sd 15, rays to 20, about a dozen on same plane, 1 to 2 wide at base, vacuoles 3 to 4 numerous, C.V. 4, food vacuole 5, granules about  $\frac{1}{2}$

Diffugia with six lobed mouth, oval 30-25 with mouth 8, pseudopods three or more to 40 in length by 3 to 5 at base and 2 near end. Often with dark lined granules extending to end, elliptical & about 1 dir long. Common

*Diffugia*  of small + large stones + uneven outline  23-12, 7. acute at fundus, pseudopods to 35 in length by 3 at base + 2 further on; also protruding in palmate manner.



July 30th *Diffugia*. Of the peculiar character observed first on 24th and seen a number of times since. The test is oval and has a slightly projecting quadrilobate mouth. Composed mostly of tricus hoods 4 to 6 long and 1 wide, with some, oval and angularly ovoid plates defined by interrupted or dotted outlines. The peculiar nature of these dotted outlines undetermined. Test has a short rim or neck 1 or 2 dir long. A specimen measured 28 long 22 broad and had the mouth 8 wide.

July 31st

*Diffugia vulgaris*. Oval 20 long, 17 broad, mouth with a rim or neck 1 long, mouth circular, 6 diam. brown edged, and of little stones, except occasionally where a large one extended to the edge. Another Oval *Diffugia* test 29-23-9 with a rim 1 long near the mouth circular but with a feeble trace of the six lobed character. Edge of the mouth brown, of small stones interior to large ones extending to the edge.

Cyphoderia and Linem a the only two forms  
observed with abundance of dendroids and  
dendroids found on Ranunculus (whiteflowered)  
in swift stream of Smith's Fork.

Cyphoderia 28-10-4 nucleus C. fusca  
obscure.

Diffugia acuminata of coarse and interesting  
small stones  55-28-12 on large stone  
attached to side  triangular was 12 long & 10  
wide at base. Another 30-14-8, with the point 5-2.

Diffugia quadrilobostoma 30.22.9 Animal  
yellowish. Pseudopods protruded a half  
dozen at once from 20 to 30 in length  
and two thick. Animal appeared yellowish  
internally from the food.

August 1st, 1877

Cyphoderia. 30-12-5 with No 7  
With pointed summit to test.

Replete, sarcod extending into half the point.  
The vacuoles at free part are yellowish, some  
with granular matter at center, others more  
homogeneous. In this specimen the median  
zone appeared opaque (almost by transmitted light);  
the posterior part whitish & finely granular but none of  
the large darkly defined oil-like globules. Nucleus obscured from view.

Echinocystis like heliozoon 11 diam. long rays 7 to 8,  
short ones 3, blunt but not pincate. A faintly  
granular atmosphere at root of rays. Interior  
of body with green and colorless grains about  
1 div. diam. No S.H. Appearance of surface of body  
as if composed of lenticular elements, probably the bases  
of the rays.

August 4th. Orange colored Heliozoon. with  
Polygonum, Hottentia. Spirostomum &c.

Body globular but changing to oval or ovoid  
or somewhat irregularly rounded. The individual  
of the drawing when globular measured 10 in  
diameter but in moving over a filament  
of Zygnuma it became irregularly ovoid and  
measured 12 by 10. Moved actively. In motion  
the sucker rays protruded & retracted. There  
were numerous on the side opposite direction of  
motion of the animal but were few on the opposite  
side where the ordinary rays alone existed.


In course of observation the surface of body at  
some point or other would well up or  
rise in one or two ripple like processes. This would  
occur from time to time and for a short period only.

The sucker rays protrude from any part of the

surface but were observed most numerous and actually moving opposite the direction of motion of the body, which slowly glided over the field.


Body granular, and orange colored, but with a superficial stratum about 1 div. thick colorless. No vacuoles, contractile vesicles, or distinct masses of food were observable within the body of the Heliozoan, nor could any trace of a nucleus be detected.

Difflugia with distinct and deeply trilobed mouth. Test rather even, of lustrous and intersecting small stones, nearly globular 24 by 23 + mouth 10. Lobe of the mouth 5 deep and 5 wide; prongs between sub acute or rounded. Edge of mouth brown.

Cyphodiscia . The dark granules occupied about two thirds the extent of the sarcodae, reaching to the very borders and completely obscuring much the portion of which distinguished only by more light being transmitted.


Arcella vulgaris. Hemispherical, even.



*A. Eichhorni*. 65 by 60 with 107. Rays few up to 25 long from surface of body. Superficial stratum of vesicles about 10 thick, on surface appeared to be about half that width. The rays appear to start from the bottom of the large stratum of vesicles. The animal contained a *Brachionus* a *Nanocula* 32 by 4 } another  15 by 3, also several small diatoms, two vacuoles spherical 10 diam, and a half dozen smaller ones some with green matter as food.

*Diffugia* observed with a distinctly 5 lobed mouth. Was active and protruded half a dozen pseudopods. When first seen had mouth towards me & was difficult to make him retreat. Length of test 28 and width 25, mouth 10 wide. Sarcoderm colorless. Edge of mouth brown.

Two oval *Diffugias* in conjugation  16 by 14

Three do observed. Form of mouth unobserved.  15 by 13 each.

*Diffugia*



vase-like 40-30-14 neck 1 long.

August 5, 77. A green Heliozoan, abundant or rather frequent in spring-pools, in which grew Polygonum, Nottovia, Chara, Fontinalis, etc. Body from 10 to 12 ( $\mu$ ) usually about 11 with numerous delicate rigid rays up to 6 or 7, apparently blunt but not furcate, with few ordinary rays double length of others. With or without an atmosphere I think of exceedingly minute granules. Movement of animal slow with slight modification of form occasionally. Periphery of body colorless, apparently composed of disks to which rays attached. Interior of green globules which appear to form a thick stratum upon a colorless granular nucleus, as in certain focus the center appears colorless. See drawing Green globules up to 1  $\mu$ .

Arcellae. Two large individuals observed in same water as preceding, in which also were many Lymnaea. The tests were brown, measured 64 wide 22 high with mouth 22 & elevated about one third of height with  $\mu$  7. Surface of test quite even. See figure.


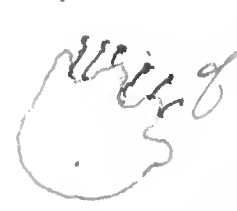

*Amoeba sabulosa*, *Pelomyxa*?

Wal, with a posterior circular disk which appeared at times in the faintest degree minutely villous, quite persistent. Animal quite sluggish in motion. Movement of a continuous slow rolling forward without protrusion of pseudopods or extension forward of clear ectosome; the granular ectosome with its trail of coarse elements following so closely that it appeared as if the advancing motion was due to an imperceptible contraction from behind so that the whole appeared to roll on without much change of form. Movement accompanied at times with shivering and corresponding thickening. Contents of fine & coarse granules with multitudes of quartz particles, small diatoms, yellowish dirt &c. Generally no vacuoles could be perceived, and if nucleus & contractile vesicle existed they were completely obscured from view. Twice during observation a spherical granular body came into view which may have been a nucleus. Also in motion occasionally several vacuoles came into view. Size 42 long 25 wide and disk behind 7 with N 7 S. H. See Drawing.

August 6, Orange colored Heliozoan. Lee drawing.

When first observed it was globular 19 div.  
No 7. with smaller and ordinary rays all round,  
the former 3 long the latter 5 long. Appearance of  
a pale round or oval nucleus 7 div. Shortly  
after protruded two short papilla like processes  
of oocoe with globules like the globules or  
nucleus at the ends of rays. Shortly after  
a broad process of oocoe protruded on  
the opposite side. Subsequently the smaller  
rays and animal became motionless &  
the animal appeared slowly to undergo disso-  
lution, gradually expanding to 24 div. the  
clear and colorless border spreading so as  
to hide the or conceal the rays. The nucleus  
became more obvious, was circular, paler  
tint than the orange colored substance &  
measured 7 div. diameter. The structure  
of the body with colored & uncolored portion  
appeared to be a pale finely granular basis  
with larger granules colored & uncolored and  
clear globules up to 1 div. diam, resembling  
the minute nuclei like globules of the rays.  
The colorless periphery of the body was  
continuous with the protruded colorless

sarcode and appeared to be of the same constitution.

Later the changes above indicated appeared not to be the result of dissolution, as the body was observed again to contract to 22 diam. and become more active. It again protruded rays, and changed from the globular form by presenting several angular projections of the periphery, and again several papilla like processes of sarcode. The latter again withdrew, and from the former angular prominences small fasciculi  of shorter rays for a short time protruded, these were again withdrawn, the body became more even and from it were projected a number of ordinary rays. Having become involved in the dirt on shaking for some time the cover glass, the animal became more globular 20 dia. diam., with ordinary short rays quite numerous. Shortly after retracted most of the latter, became very irregular in form from angular extensions  of the colorless bodies on one side. These then were again withdrawn and the same portion  became occupied by many shorter rays, or rather ordinary rays with



fine grains and some sarside along their length  
as often observed on the rays of *Actinophrys*.

Then withdrawn the granular or sucker rays, became  
oval 21 by 18, and glided along protruding all  
round ordinary rays with no sucker rays.

These ordin. rays were longer, stouter and  
fewer than those originally observed, & were  
more numerous on the side in direction  
of gliding motion of the animal. It once  
more assumed nearly the original circular  
form 18 diam with both kinds of rays, but  
fewer, especially the sucker rays, which  
projected from one fifth the periphery on the  
side opposite the gliding motion of the  
animal. As the animal moved on it  
would from time to time slightly change its  
shape, become flattened on one side, become  
uniform, oval more or less angular &c. The  
ordinary rays up to 7 elongate animal, would  
swing from side to side, while the sucker rays  
would be projected & as rapidly withdrawn.  
In course of observation in several instances it  
appeared as if the nucleus underwent some  
change of form, from globular to oval and  
even irregular. It finally was completely

obscured from view, and the interior orange colored cutaneous  
appeared lighter and darker.

An apparent cast skin of the Echinocystis-like Heligom  
with blunt spines: Spines or rays 7 long, apparently blunt  
no appearance of furcation. The skin at the broken  
edge appeared to be made up of a double contoured  
interrupted line, apparently composed of confluent  
minute lenticular plates? perhaps the bases of the  
spines. Apparently a few of these lenticular disks were  
seen isolated, but it was not positively determined that  
they pertained to the spines.

Diffusoria 16 long 13 broad, with a neck 1 long and 5 wide.

Mouth irregularly circular, following outline of the stoma.  
Associated with multitudes of Diatomas, mostly a  
sigmoid navicula  $\int 40 \times 5$ , from a pool connected  
with Smith's Lake, in which grew *Botryococcus*.

August 11th. 1877 China Lake, Minto, N. I.  
Limnema acinus.

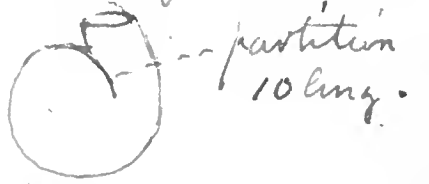
Euglypha alveolata, spineless variety

do do 26, 16, 7, with short spines, four or five,  
to fundus only 2 long. Four intermediate serrate points  
to mouth.

Euglypha browniana? colorless test, empty, 12, 9, 3.


Difflugia pyriformis: in considerable variety of size and shape, and in proportionate size of stones. The commonest form. One 50-40-15 coarse stones.


Dif. spiralis - of stones, not common. 32 long, 29 broad, 22 thick, neck 4 long mouth 8  
Also found in Siphon pond.



Dif. marsupiformis. Several varieties.

See drawing of Aug. 12. Body of test covered with ditto particles and stones; the mouth part of diatoms etc.


Difflugia -  68-60; neck 40 wide, 9 long from level of mouth, width across rim 48 depth of reflection of do 4. Large stones in fundus of which several formed conspicuous projections, but no true processes.

Difflugia acuminata. The point generally an abrupt finger-like process, obtuse nearly thick as long, and in many specimens unsymmetrical or projecting from side: → 

The stones often crasser at intermediate part of test than at fundus.

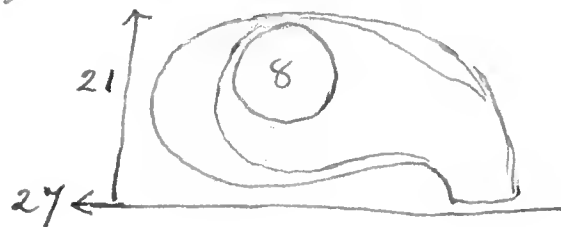
Schinopyxis. Considerable variety, with spines, and without spines.

Arcella discordea 25 broad mouth 8, height of test 8.

Arcella vulgaris 23 wide 13 high mouth 5 Cupped variety, three rows caps 5 wide. 

Cyphodonta - not infrequent, with obtuse furrows

30-17-5, nucleus 8.



Echinopyxis 50 linear 17 high mouth 20  
loaded with coarse striae at back  
border. No spines mouth with four sinuses edged  
into lumen. Test rare silica.

Arceella. of extreme delicacy - See drawing Aug. 11.

Another indiv. 15, mouth  $2\frac{1}{2}$  sarcide diffused over 11.  
apparent nucleus 2 enclosing a darker nucleus  $1\frac{1}{2}$   
several cont. vs. to 2.

Echinocyrtis viridis. 20 diam. Furcate rays  
numerous, apparently of one kind only, i.e. the  
longer ones, measuring about 12. In  
drawing sometimes a large fasciculus of the  
rays converged on one side. Ordinary rays few  
up to 18 long. Cylindrical periphery  $1\frac{1}{2}$  thick. Fine grains ranging  
from  $\frac{3}{4}$  to 1 in average about 1. A thin stratum of fine granules  
lining the within of the rays.

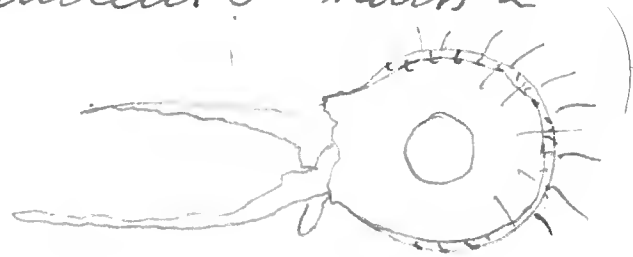
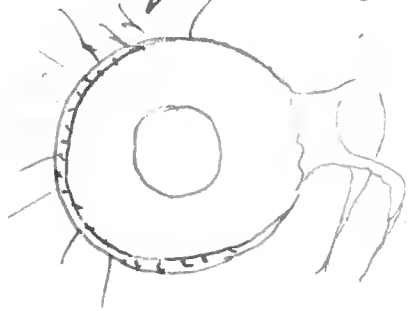
Nelchela! Empty test; compressed angularly pyriform  
mouth elliptical. 30-17 by 12 + mouth 7 by 5.

Test with rounded polyhedral meshes of variable  
size mingled with a few linear forms.



Amoeba gonialis. ordinary form.

Amphizonella vestita Test faint luminous, with short stiff hairs. Body 10, nucleus 3 hairs 2 pseudopods up to 12



New genus et sp. Pseudopods filamentous as in Euglypha and Cyphoderia. Test in form like that of Cyphoderia but with two appendages one on each side of fundus. Structure of test chitinous, yellowish, with adherent sand particles, but with no evidence of the structure in Cyphoderia or Arceella, but appears to be like that of Echinopyxis. See drawing August 13th. Chiass Lake water contains Euglypha glabra. Living specimen. Test globose with neck 9 long, body 7 toward neck  $1\frac{1}{2}$  long mouth 3 wide.

Euglypha alveolata. Several specimens seen with 5 and 6 divergent spines from fundus.

Nebula sumata. A very characteristic test observed. See drawing of date. Also several others less well marked.

Arceella, discoid form. 30 wide 10 high, with mouth 14 wide or nearly half width of test. See drawing of date.



*Pelomyxa* - Oval 80 by 40 See drawing of date.  
Translucent, colorless, replete with a granular  
ectosome mingled with food or dirt consisting  
of granules, quartz particles (up to 7 by 5 in size),  
diatoms, fragments of desmids and of hyphom  
leaves. Ectosome colored more or less with  
brownish and green from the food like particles.  
Movements of animal. Usually a slow regular  
inward rolling motion, the ectosome following  
closely on the advance of the ectosome.  
Occasionally from the fore part, in front or  
on either side there would be a rather  
abrupt protrusion or advance of the ectosome  
followed by advance of the ectosome as if on  
the point of bursting. Generally in the  
progress of the animal, from behind there  
could be observed protruding the edge of an  
apparent circular disk, striate and minutely  
villous at the edge. Projecting from the edge  
there could also be detected from time to time  
cilia-like filaments, not vibratile, as rep-  
resented in the drawing. Frequently the villous  
disk was altogether absent. No vacuoles  
were visible, nor at any time did a  
contractile vesicle come into view. There

was also at no time any motion observable such as is often seen in an *Amoeba* from the collapse of a cont. vesicle. At times a strong light transmitted would show a clearer central spot as if dependent on the existence of a nucleus, but no other traces of this could be detected in the motions of the animal.

Would slowly roll onward without change from the oval form, or would assume form as represented in the drawing. In the former condition would exhibit no trace of the villous disk. Sometimes instead of the latter the back end would appear to be gradually resolved into a fine villous fringe. When disturbed and made to contract to nearly a globular form it measured about 55 diam. Shortly after it assumed an oval form 60 by 40 with a posterior circular villous disk about 10 diameter.

*Diffugia* with trilobed mouth, of stones

*Amoeba numata* with unusually well defined neck. Test plate shaped. Aeneolae indistinct. See drawing of Aug. 14th.



August 14th. *Altinophrys Eichhorni*. Frequent  
in China Lake. A fine vigorous individual.  
See drawing. Globular 70 div. diam. Outer  
stratum of vesicles 10 thick. Rays numerous  
uniformly distributed - to 45 long beyond the  
surface of the body. Outer vesicles 6 & 7 thick,  
by 10 deep. Inner vesicles 3 to 5 diam. A  
large cent. vesicle 17 by 13 but enlarged to 20 by  
16 before collapsing. Animal contained six  
large food vacuoles in interior 15 or more in  
diameter, one measuring 20. These contained  
large white granular food balls; one a vorticella  
not yet dead; another from the jaws indicated a  
rotifer; the others undetermined. A similar large  
food vacuole occupied the outer stratum beside  
a smaller one, both of which were subsequently  
drain into the interior. The animal also con-  
tained three large diatoms, a *Trinema*, and  
other matter not determined. See drawing of late.

August 16th. Water from a small lake  
at foot of Bridge Butte about 8 m. from Ft  
Bridge obtained the previous day. Alive  
with *Cyclops*, *Daphnia*, *Gypris*, & *Colaps*.  
Also contained abundance of *Eupirene* several  
species, besides *Spirontocaris*. Many dead

and diatoms. Of Rhizopods there was a great abundance of an Amoeba, and a vase-like Diffugia.

Amoebae often spherical, limaciform, pinnate, stellate, with blunt digitiform pseudopods, few or many, often with a posterior villous process. Usually with one contractile vesicle. Nucleus absent or indeterminate from oil-like globules or food vacuoles. Body ~~and~~ sometimes

with a fine granular contents with some darkly defined ellipsoidal, crystalline granules. Usually more or less replete with food, consisting of diatoms, desmids etc. Most of them contained several diatoms.

 One of these without food, nettle-like measured 20 by 20. Another limaciform  bent on itself with several diatoms measured 33 by 12. Another pinnate measured 30 by 15. One had a large diatom when first seen at right angles, see figure of date.

A large one meas 30 by 20, with a pseudopod 15 by 3. Cent. ves. from 3 to 5. The vase-like Diffugia, very abundant & almost the exclusive one. = Obovoid, with the mouth at the broad end, and usually

Sketches from microscope 18th Nov.

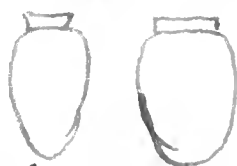
surrounded by a straight rim 1 or  $1\frac{1}{2}$  long, occasionally  
erect or short funnel like and 2 long. Mouth  
round. Feet not infrequently same or less  
asymmetrical, or oblique, or more prominent  
on one side than the other. Small ones, not  
frequent without rim to the mouth resembled  
*D. vulgaris* - one of which was oval 20 long 17  
broad with the circular mouth 7. A large  
rimless one was 42 long 32 broad with the mouth  
12. Another with short straight rim to mouth  
was 50 long, 30 broad with the neck 1 long &  
mouth 14. Another see figure: was 50 - 28, neck  
erect 2 long 17 wide at edge. Feet constructed  
of median sized spines & exterior comparatively  
even.


China Lake, Aug. 16.


*Actin. Eichhorii*. An individual, actinic con-  
taining two small diatoms, &c. Diam 30  
rays many, uniformly distributed to 30 long.  
Outer stratum of vesicles 7 thick. Rays punctate  
to the inner vesicular mass which measured  
about 15 diam (No 7).

*Euglypha alveolata* with eight short spines to  
fundus not more than 2 div. long. a common form.  
30-18-7. Three intermediate pts. to mouth.  
Nucleus clear spot 7.

Aug. 21 *Cyphoderia*. A frequent form in China Lake. All from this locality seen had the fundus obtuse, while nearly all of those from Ft Bridge ponds & pools had the fundus more or less abruptly narrowed into a digit-like point. In a specimen from China Lake 30-13-4 the nucleus was unusually distinct & measured 7.

Diffugia. Bridge Butte pond (Lumber Pond) contained multitudes of an ovoid vase-like *Diffugia*  with a short neck or rim, usually straight, rarely excited, but they were all empty. 52-28 - neck 2 by 14. Body ovoid the narrowest pole forming the summit.

Diffugia pyriformis from China Lake 115-85-45 of course stones. living specimen: — 


Diffugia - pot-form, with last 70-60, at rim 42  at neck 35. Edge of rim thin, of minute stones. Surface of body uneven; of large stones.

Euglypha compressa. China Lake. Hirsute variety. 18-10-4 by 18-5-3. Hirsute all over at 5 above the mouth. Hairs about 5 long.



Aug. 23 China Lake water.

Observed two additional specimens of the new genus, one living, the other an empty test, of which see drawing of date. Test membranous, clay colored, granular, with adherent quartz grains smooth with a delicate, colorless, membranous lip reflected outwardly, and with an undulant edge. Individual 35 long 28 wide between points, 18 thick, mouth 7 with the reflected lip 10.

In same water Cyphodonta frequent. A three lobed smooth Diffugia was nearly globular 32 diameter with  mouth 10 between points of base and summit lines, the sinuses or lobes 5 deep & 5 wide. Test of stones, undulant, even.

Acetella vulgaris, cupped variety - See drawing. Diffugia of jet form with beautifully delicate reflected lip of fine sand particles; the body covered of large and moderate sized quartz grains. Another with erect lip but not reflected and somewhat pointed summit. See drawings of date. Outlines of one half.

The three common *Diffugia* of China Lake  
are. *D. pyriformis*, *D. acuminata* and  
*D. - pot-like*



*D. spiralis* and *D. marsupiformis* less frequent.  
*Actinophrys Eichhornii* and *Cyphoderia* also  
common.

*Euglypha alveolata* with very short spines  
moderately frequent.

*Acella vulgaris*, cupped variety most frequent  
of this genus.

*Echinopyxis*, with & without spines & in  
considerable variety, moderately frequent.

Philadelphia. September 20. 1877.

Dinamoeba. From Atco, N. J. Sep. 21.

Early in the morning observed a specimen  
See drawing of date I. pyriform, apparently with  
a half cell of Chlosterium in body transversely  
and projecting on left, with a large vacuole  
20 diam, and other smaller ones contiguous.

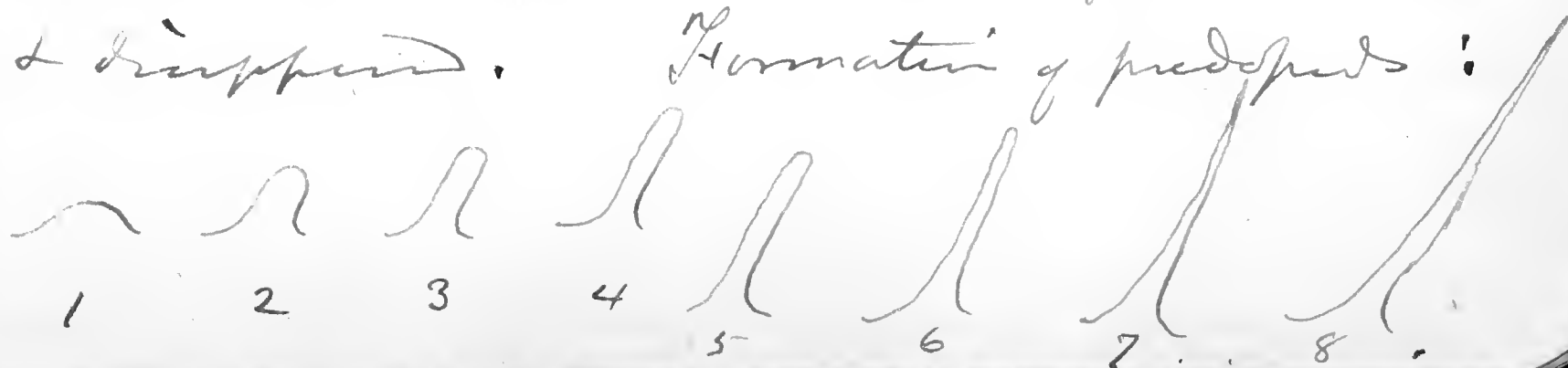
Length 45 width of body 35. Length Chlosterium half  
cell 52. by 5 at narrow end + 11 at broken end, Pseudo-  
pods only from head of pear; no villous processes  
behind. Spicules moderate in quantity. Thin  
ectosome extended over the projecting part of  
the Chlosterium & this was also spiculate.

View second - an hour later II. Length 55 width 35  
Chlosterium longitudinal, observed to be doubled  
the fore part shorter, colorless and shrivelled.  
Large vacuole still present. Later III Outline  
pyriform Chlosterium oblique. A villous tail to right.  
Food balls crump. few confined in this and previous  
views in advance of the large vacuole. Two  
small vacuoles in villous tail. 60. by 25.

Later IV Body huscint shaped, villous tail gone  
55 long - 28 wide in front 25 behind. Pseudopods 10 to  
30 in length. Later V. Discharge of fine granules

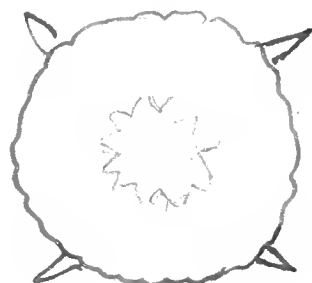
and ligured to left of tail end, & projection of  
a pine shaped process 10 by 6 which gradually  
became a pseudopod 20 long. The large vacuole  
had disappeared & its place occupied by several  
others of which largest measured 10 div. as seen  
in VI. Latter part of afternoon as in VII 60  
long 30 wide at fore part & transparent tail end.  
even or without villous processes 25 long &  
15 broad. A vacuole at end with green  
excrement which was shortly after dis-  
charged. Several similar masses descended  
& one discharged in same manner. Tail  
end formed of clear ectosome. Contents of  
animal though discharge of matters had  
become more translucent & thus seem to  
consist of molecular granules from a mean  
point to  $\frac{1}{2}$  to  $1\frac{1}{2}$  the larger like fine  
oil or aleurone globules; also many vacuoles  
everywhere apparent from 1 to 4 or more in  
size. Pseudopods to 25 & 30 long. Spicules  
apparently everywhere absent or had  
disappeared entirely. Several of the back  
pseudopods with small rounded villi. In  
the evening found that the animal had  
discharged the Clutonium which lay.

next by: Animal as in VIII 55 by 25, with  
eight pseudopods 15 to 25 in front. Hood bulges  
all at anterior third of body. The Clitellum  
half cell 52-5-11 - ~~pale~~ raw sienna color  
darker at the end. Endochrome forming a shirled  
knotted end; from open end projects the thin  
shirled edule. Other half about 30 long. Was  
this a Clitellum which had been swallowed  
just after the production of a new half cell?  
which was then delicate & edule. Appearance  
of animal next morning as in IX, viewed and  
drawn under Waler 1/10 (All the other viewed as  
usual with the N.Y.S.N.) Under the 1/10 measured  
70 long indep. of the tail processes etc. Form discharge  
of food. Unusually transparent. Contents of  
vacuoles ranging from 2 to 10, and a molecular  
series of granules up to 1 in width, about 1. Hood  
bulges far in front. The vacuoles proteins  
measurings appeared to under very low contraction  
or very low enlargement. The larger appeared slowly to  
disappear while small ones started into existence  
& gradually enlarged & in turn again contracted  
& disappeared. Formation of pseudopods:



Diffugia corona Lotus Pond, Woodstown, N.J. Sep. 22.

Comparatively even and globular 25 diam. Mouth  
13 with eleven points and sinuses. Points acute &  
brown, sinuses rounded 2 wide and deep. The 4  
spines of the fundus, indep. of central one, could  
be seen nearly equidistant  
in the view from the mouth  
projecting 3 and 4, thus.



Acella

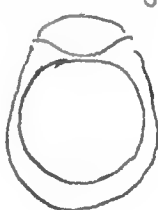
An Echinocypris found with alve. With Vales 1/10  
green globules 1 1/2 to 2; forked rays 20, divergence of  
forks about 1, divides at base about 1 1/2. Body  
pale green 35 diameter.

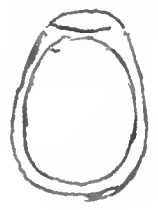
Sep. 24. Examination of Echinocypris from Sanford Pond  
Maine. Test appears to have the same constitution  
as in Acella, but is generally more or less & sometimes  
completely obscured from view by adherent sand grains  
and diatoms, and in addition by the oaracle & its alveolae  
and contents of diatoms etc. Constitution especially distinct  
in the darker colored specimens, usually well marked  
in the body but not discernable in the spines. These  
latter generally have a columnar ~~trapezoid~~ print that  
looks like putrins for the open end of minute prints  
of oaracles.




*Echinopyxis*, of same form and constitution & color as the former, but without spines. Approaches closely in appearance the discoid form of *Arcella*. From this differs in ascending process of mouth and adhesion of numerous fine particles of sand. Lotus Pond - Woodstown N. J.

*Arcella Sphaeria* - Hammonton N. J. Sep. 27, 1877

Tut 34 long 28 broad. Sarcocoe forming a circular hall 23 diam, green globules within chiefly 2 diam. Opercle 7 thick.  breadth 16 of mouth do.

Another with it 26 long 19 wide, sarcocoe hall oval 21 long 17 wide green globules chiefly 2 diam. Opercle  $3\frac{1}{2}$  thick mouth 11 wide. The sarcocoe hall & opercle nearly occupy the interior 

An empty test nearly by 8 in company with preceding was 37 long 28 wide with mouth 17 wide, area of test about 2 diam. - Meas No 75. H.

Nebela allied to former, loaded with stones at fundus and animal colorless - probably an undescribed species. Length of test including large stones at fundus 40 - without 34; breadth 20 mouth 15. its projection 3 - breadth of mass of stones 17 depth of larger ones 12. Sarcocoe mass 20 by 15; area of test 142. 

A second of same kind with large stones of  
founder 42 long, 22 wide, mouth 14 wide. Then  
found in water of Neammonten Pond. The  
test as well as the sarcoid colorless, except  
from the food which consists of diatoms, desmids  
etc. Meas. No 7 S.H. Sep. 27. 1877

A third represented in drawing of Sep. 28, as  
viewed & measured under Water 100.

Mouth elliptical, with acute commissures.

*Annela princeps*. Woodstown Lotus pond, N.J.

A large specimen, when first seen covered a  
space of 150 by 150 and appeared to be in state  
of division. Thus:

intimus 40 thick (with No 7 S.H.) but one flared again



with the and 55 long  
into the other. In this, after observed as the  
contents of a large pseudopod flared inwardly  
it contracted and became shrivelled in.  
appearance with grape like appearance  
of the surface. After remaining two days  
in live box, appeared quiet, forming an oval  
mass with defined line 115 by 95 closely  
covered with small globular pseudopods looking  
like a layer of globules about 4 thick.  
Then measured 3 & 4 in diameter and



contained granules, together with an occasional crystal. (With No 4 measured 20 by 18) former measurements are with No 7.

*Amulea princeps*  
with No 4.

35 long

(Forams 40 wide with No 7, larger branch 15 wide  
lesser ones 15 thick. vacuoles + food balls 5 to 7.)

Another measured with No 4

was 30 long. 7 wide where thickest

with main branch 3 thick and smaller ones 2 thick.

Another measured 40 long with an expansion of 15,  
anterior end 3 wide.

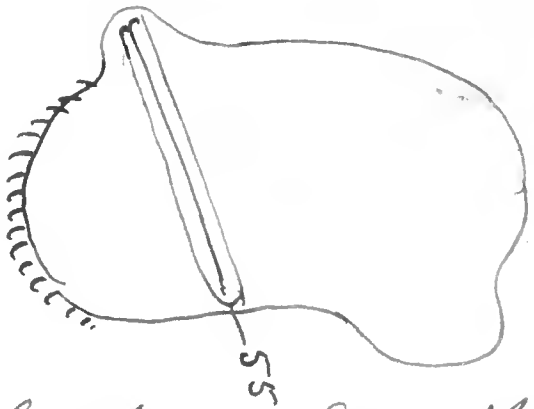
In a large specimen extending into two branches  
one of them was 200 div. long the other 150 with  
No 7 15 to 20 thick.

With No 10 Water a contractile vesicle in  
tail end measured 20. The villus tail end  
was 50 long 40 wide at base. The body in  
advance was 50 wide. The villi measured  
5 to 10 long. The octahedral crystals were 3  
long by  $1\frac{1}{2}$  wide. Oil like granules measured  
up to 1 in diameter

Pelomyxa. From Hammonston pond, N.J.

Sep. 28, 1877. A large specimen oval, then reniform 75 by 50 by reflected light appeared cream colored with brownish and greenish spots and minute transparent villi peripherally.

Contained a deciduum doubled across causing a projection on the left and measuring 55 across. The peridium



was covered with clear ectosarc

with granular matter in axis about end of the

Decidium. See drawing.



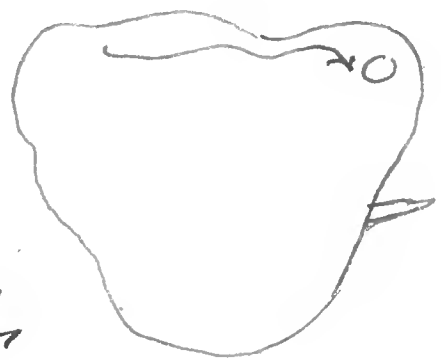
Afterwards measured 100

long by 37 in front & 40 behind. The short process with villi contained small vacuoles & granules.

With No 7 S.H.

With  $\frac{1}{10}$  Water the villi appeared linear & from 2 to 3 div. long.

In another view in which no villi were visible, appeared somewhat cordiform 60 by 60. As



ectosarc bulged to right or other position the ectosarc flowed in laterally, mainly of granules but occasionally with a visible vacuole. Once in a while a small conical pseudopod would appear. Next day appeared





like a spherical globule of transparent colorless ectosarc 50 diam. with a fine granular mass occupying more than  $\frac{3}{5}$ ths. containing a clearer spot apparently a nucleus.

measuring 25. It also contained several vacuoles and few cells, all of them having been excluded.

From Spencer pond. Maine:


*Actinophrys Sieckhorui* 35 diam. The central mass  
20 Rays to 25 long. The "red Acineta". *Diffugia spinalis*

*Diffugia cirrus*. *D. pyriformis*. *D. acuminata*

*Acella vulgaris* of several forms  

 *Euglypha alveolata*. *Echinopyxis* -

One test with eight spines. Curved discoid

*Acella* with large aperture - oval 66 by 62, mouth 32 by  
28. Height of test about 20. Also polyhedral form .

*Diffugia olla*. Abundant in Hammonden

pond. A large specimen 85 long exclusive

of spines 75 broad. Neck expanding outwardly  
with a narrow reflected rim of minute stones

58 wide, 50 wide above where begins to

enlarge in body. Neck composed of the

largest stones, most of them the depth

of the neck. Body of scattered larger &

intermediate smaller stones, none so large

as those of the neck. Seven short blunt

spines to pedicels each ending in a

single stone wider than the spine just below

it. Spines 8 long 5 thick at middle: - one

central, the others forming an 'irregular' or

circle

(Meas. No 7 S.H.)

Diffugia Olla - 88 by 80. Neck & lip 10 long;  
reflected lip 58 wide, neck 45 wide. Lip  
blunt spines to fundus, ending each in a  
single broader stone. Spines 10 by 5.  
Animal colorless, pseudopods to half a  
dozen or more. Seven seen at once  
3 thick. Atco, N. J. Sep. 28, 1877.

Quadrula symmetrica with 7/10 Wales 27-15-5.

Large plates near fundus 4; near mouth 2.

Ephyra Hammon . Sep. 28, 1877

Ephyra brown, abundant Hammon

Pelomyxa of Atco N. J. Sep. 29. An individual  
observed 45 by 40 Oval, quiescent, with no  
appearance of villi, perfectly even at the  
border. Pelomyxa is readily seen with  
the naked eye, looking as a white granule  
among the other materials with which it is  
found.



*Amoeba princeps*. Nolumbium Pond, Woodstown

N. J. Sep. 30. A large active individual in irregular palmate form, occupied space of 130 div in length and 90 in breadth. (See drawing of date) with pedipeds 10 to 15 thick. Cont. vesicle 9 or 8 to 10. No discoverable nucleus! Many food

balls in axis, usually 3 to 6, some to 10 or even 15; globular, oval, irregular, straw colored, shining or oil-like, refracting granular, dark outlined. These mingled with many pale colorless vacuoles 3 to 4 div. Food not in vacuoles distinct from the granular masses. Observed a

Brachionus? alive within the prot. end, in advance of Cont. Ves. This later was converted into an oval ball resembling the food balls above described. In movement, the body generally and also the large pedipeds present a longitudinal ridged, folded or fluted appearance. The axial contents of ectosome move as if in the interior of a thick walled cavity, of which walls composed of finer granular matter with scattered crystals, while moving parts of granules, vacuoles, crystals and food balls, Cont. Vesicle generally posterior but may also move with other matters. In movement, all axial contents do not move

together, some including food balls appear to adhere to inner surface of extensor tube but gradually become detached & move one after another. As the posterior part of body becomes exhausted of its contents (axial contents) it contracts, shrivels, assumes or continues its mulberry-like appearance as this contracts and disappears the part of body in advance assumes or continues the same in appearance. At times current pursues an opposite direction and the tail end expands, radiates & becomes the fore end, while part which was previous in advance assumes the villous appearance. At times in extreme contraction, after the ~~irradiation~~ irradiation of a great multitude of smaller pseudopods, the ~~pseudopod~~ body especially at its knotted part here assumes a tessellated appearance from the mutual pressure of the short pseudopods on one another. Want of irritability often exhibited in no contractile movements observed in consequence of shock, or contact with an Aquilula in active motion.

Arcella — ? Atco. N.J. Oct. 3. Sireal  
observed. One with test 26 north 8 N 75 H.  
had two nuclei 2 diam or with halo over 3.  
had also eight c.v. at once measuring from 2  
to 5 two at once reached 5 div.



Another had six gas? bubbles  
thus: These gradually disappeared without  
any apparent displacement.



In another observed three nuclei and from 9 to  
a doz c.v. at once from 1 to 3 diam. usually  
about 2.

Heliozoon from Atco, N.J. Oct. 3, 1877  
Same previously seen in water from Broad Mt.

Sep. 12, 1876 Measurements with No 100 Nales.

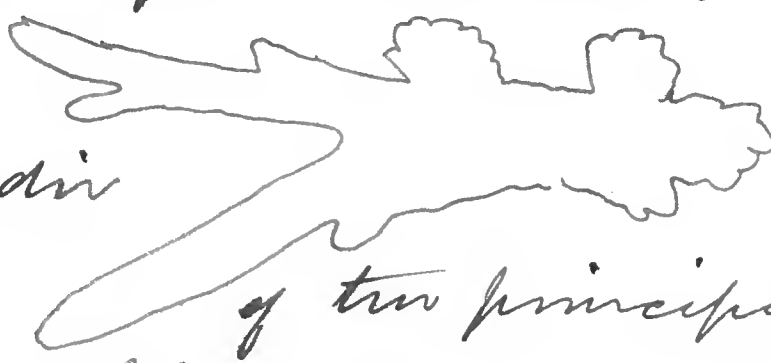
Animal presented a pinkish hue, was biscuit  
shaped, or elongated oval & narrowed at middle  
30 by 17  composed of an aggregation of  
minute globules 2 div. pretty uniform with  
a bright red globule (carmine color) within  
about 1/2 div. Rays everywhere from 4 to 10  
or more. Movements slowly sliding over  
filld slowly changing the form. As it  
moved an apparent break occurred near  
centre  through a thin layer of  
the globules were seen & it made the

animal appear as if hollow & having the globules on the surface of a colorless central sarcodic matter. Some of the red prints within the constituent globules appeared brighter red than the others. Ray exceedingly delicate not radiating regularly, but in any direction from the surface. Some apparently branched

*Amureba princeps*. Woodstown, N.J. An active individual

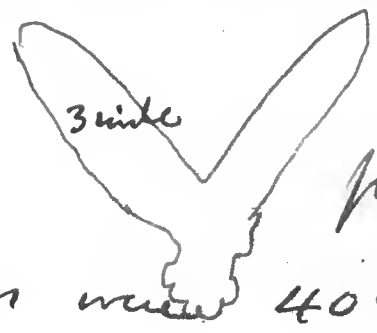
length of 160 div

The longest of two principal arms was 100 by 10 in thick.



occupied a length of 160 div with No 7

Afterwards viewed with No 4 presented a Y like appearance. The arms were 40 long and diverged 60. These diverged more and more until occupied nearly same line & measured 80 long by  $2\frac{1}{2}$  & 2 wide. Supposed were going to separate, but the one div. afterwards flowed into other & creature assumed the ordinary palmate form.



Dinamvoker. Atco Water Oct. 6, 1877

viewed with  $\frac{1}{10}$  Wale. As first seen Oval 80 by 50  
white, with spots produced by cells of Didy. Sordid.  
Predspuds as usual, but instead of the usual  
bacteria-like cils had apparently attached minute  
darkly defined globules or granules looking like oil molecules.  
Undetermined whether on free surface or contained within minute  
portals of ectosom. See Drawing of Date. Predspuds few.  
Animal sluggish. Border of body exhibited very minute  
spines & granules as on the predspuds.

Clathromyxa on under side of Nymphaea leaves

Hammon Pond. N. J. Oct. 6, 1877 ( $N^{\circ} \frac{1}{10}$  Wale)

No 1. Somewhat pyriform 21 by 19 brownish. Lattice holes about 2

bars between less than 1, rays exceedingly delicate to 15.

Test filled contents indeterminate. Rays involved  
in a faint granular stratum at least about 2 thick


No 2 20 by 18 same form and appearance as No 1 except  
rays not involved in granular layer at cost.

No 3. Spherical, 16 diam. colorless, lattice very pale, with

an interior mass 60 with globules from 1 to 2 & granules  $\frac{1}{2}$

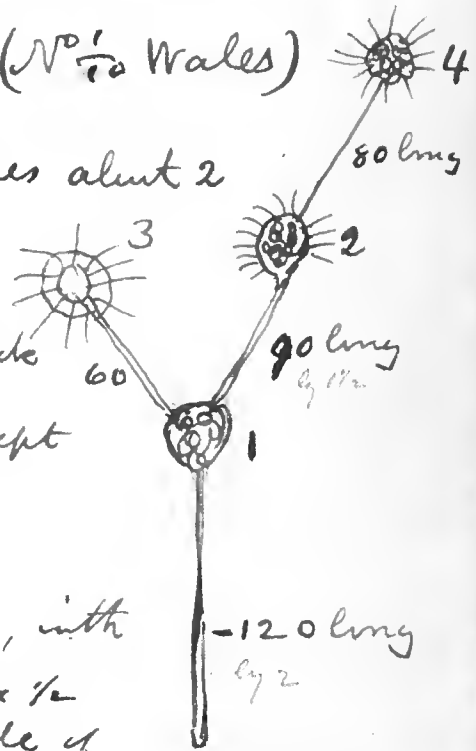
Rays extend from this central mass, & 12 outside of

the lattice work of the test, the lattice holes same size as in others.

No 4. Apparently without test 12 diam.  mulberry like composed  
of granules & globules the latter 1 to 2; the larger globules  
look granular. Rays to 10. Apparently an internal central  
nucleus about 4 but too indistinct to determine character.

The stems are double continued on each side & measure  
2 thick. Delicate circle, outline of test afterwards discerned


& No 4 giving it a diameter of 15.






Arcella young. Oct. 5, 1877 Observed many minute Arcella in water from Atco. Mostly dark raw sienna or light burnt sienna color. Usually from 7 to 9 div lined with 10 Wales. Generally the mouth not visible apparently obscured by the interior sarcoid. Generally adherent to the cover glass, and could not be detached by shaking. The crested structure of the test quite distinct about  $\frac{1}{2}$ . Contractile vesicles usually two or three. Usually also a pale nucleus surrounded by clear halo in which see some decided color of the test, as is also the case through the C.V. The latter about 2 div. Nucleus indep. of halo  $1\frac{1}{4}$  to  $1\frac{1}{2}$ . Sarcoid granular, with larger globules cil-like & minute granular balls, probably food. Examples. One light burnt sienna, distinctly crested 8 diam. Cont. ves. to 3 in number 1 to 2 diam. Nucleus  $1\frac{1}{4}$ . Sarcoid mass 5 div. A second paler 7 diam. sarcoid mass  $4\frac{1}{2}$ , one C.V. 2. Nucleus not detected. A 3d size of first but pale raw sienna, with two C.V. on one side & pale nucleus with halo, not seen. A fourth like the first. A fifth do but 9 div & darker. A sixth, See figure, 9 diam. Cont. ves. on left dis-appeared & reappeared constantly, while what was supposed to be another one portion of nucleus remained permanently, & therefore supposed to be a vesicle enclosing latter.



In another, apparently the mouth faintly seen as a circle  
of 2 dir. In another 8 dir. See fig. with 3 c.v. and a  
nucleus.

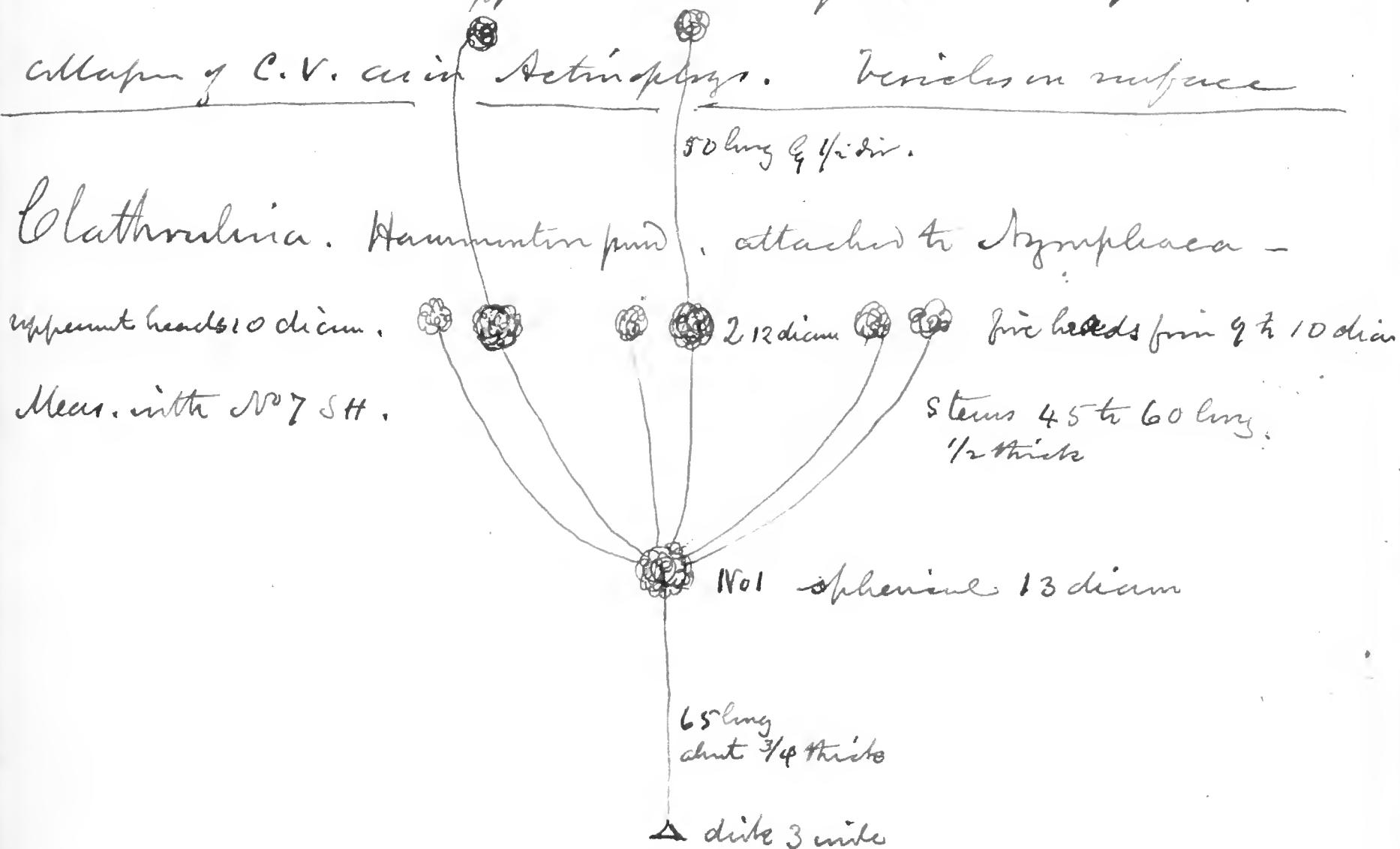
*Diffugia olla* - Atco. N. J. Oct. 6, 1897 A large  
indiv. 90 by 80 with tentacles of funnels 10 long and  
10 wide at base ending in one or two large stms  
as wide as length. Thus  Pseudopods 3 + 4 thick

*Diffugia* with feebly quadrilobate mouth thus:  8  
Test of stms, void  35 by 25.

*Amoeba princeps* young. Atco water  
20 by 6 (N<sup>o</sup> 7) crystals 1 to 2 long  
Contents granular, oil like do crystals, minute  vacuoles  
a c.v. to 3 diam. No nucleus detected.

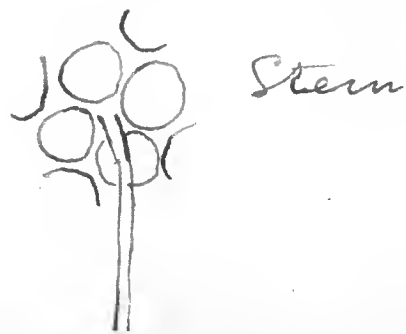
*Clathrofilina*. Oct. 7. Next morning the head N<sup>o</sup> 4  
was empty. Near eye was a pedunculate  
Actinophrys like body, without discernible test:  
Head 13 diam. rays to 15 <sup>x 20</sup> delicate, granular. Head granular  
with glandules about 1 <sup>to 1 1/2</sup> diam. Stem 35 by 2 (N<sup>o</sup> 10 Wales) End  
of stem exhibited minute radiating lines upon the glass.  
Whole colorless. Body apparently with a central faint  
granular nucleus 2 in diameter. Head with irregular  
mudlike like outline with vesicles on surface up to 2 diameter  
A few vesicles attached to rays - apparently animalcular food.



Head would slowly change its form, becoming more regularly spherical or the reverse. Vesicles would appear to slowly rise in the surface but remain a long time unchanged before they would disappear. Could detect no appearance and quite development to collapse of C.V. as in Actinopterys. Vesicles on surface



In some species of Clathrovaleria the creases of the test appear decidedly circular and oval in others more of a polyhedral character. In some also the main stem only 1 in thickness with 10 Wales; in others twice the thickness.

A full grown empty test measured with 100 Wales 17 diam, with circular holes 2 1/2 intervals 1/2 or less, stem 1 thick 110 long and dia 3 wide. attached in interval of four holes: →




*Heliozoa* — ? An Actinophrys-like animal  
Colorless, spherical, with exterior layer of disks and  
delicate rigid rays, not furcate, but starting from minute  
disks. Interior colorless fine granular contents with pale  
granules. Glides slowly like Actinophrys, sometimes fasciculi  
of the rays away towards one side. Slight change of form  
from the sphere, from elevation of the center invagination.  
Meas. with  $\frac{1}{10}$  W. Body 12 diam, rigid rays 10 long. Soft rays  
few, about invisible to 15 or even 20 long. While observing  
the animal, saw coming into contact a quite moving  
oval flagellate body 5 long. Suddenly lost its power,  
& assumed a spherical form.  This was uniformly pale  
& finely granular with a pinkish vacuole. This body  
was drawn several times to the heliozoan and on often  
pushed away beyond ends of rigid rays but retained by  
several of the soft rays. As was pushed off it was shown  
to have adherent two of the detached rays of the heliozoan.  
In moments of drawing in and pushing out the heliozoan  
twice became void from projection opposite the  
apparent food ball but afterward assumed its original  
form. Trying to the Heliozoan swallow its food, the  
ball was watched for several hours. After time a  
globule appeared on one side & this elongated to 5 by two thus:  
 showing it to be a germinating Zoospore. This continued  
to grow and finally was abandoned by  
the heliozoan.

*Amurella radiosa* Steen water. (tent 1/5) occupies



space of 40 by 20 in stellate form.

Contents: CV 4; granules with larger like oil particles and few minute vacuoles. No nucleus detected. No crystals

*A. radiosa* do. (1/10 Wales.) Body rounded 4. with eight pointed arms thus:  8 to 10 long 1 1/2 to 2 wide at base; CV. 2. Pale round spot probably a nucleus 1 1/2.

*Arceella*. do (tent 1/5) 21 broad, mouth 7, bright orange sienna, areolae of test distinct 1/2

divided into two amoeboid masses:



Sarcodae

nucleus + halo 2

larger mass occupies space of 10 by 10 on right, smaller one mass of 5 with its projections.



*Diffugia* from under surface of *Symphyla* leaves

Hammonton. N. J. 18, 12, 4 Sarcodae within 3 of bottom



mouth deeply trilobate  scutum 7. Protopods 1 to 1 1/2 wide.

Test dark sienna color, circular in transverse section.

with an indistinct areolar structure. A lighter colored one.

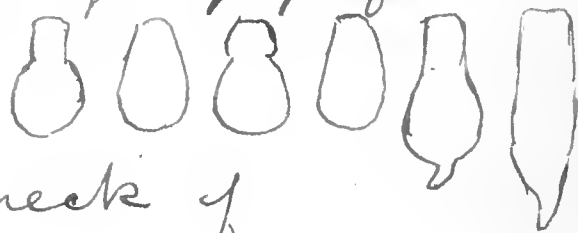
measured 20, 12, 7, & sarcodae reaching within 4 of bottom.

A third seen of same kind. (Nº 7 SH)

Oct. 8. The Helizoon examined yesterday. Still in active condition. As it moves it occasionally raises part of the coat sometimes thus:  at other times thus:  in latter case assuming an oval position, the lifted portion forming narrow end of the form. Contents of fine granular matter with many globules from  $\frac{1}{2}$  to  $1\frac{1}{2}$ , mostly about 1 (with  $\frac{1}{10}$  W). In focusing for the centre this appears paler and to consist of a nucleus of fine granular matter without globules. Some of globules few in number as much as 2 perhaps odd. Some detached rays exhibited disks at end scarcely 1 toward.

Another individual meas. 16 diam with soft rays extend even to 25 then granular & exceedingly delicate. The lenticular lines forming the coat appear to be distinct from the minute disks of the rays and are 2 or 3 times as long as wide.

Oct. 13. In ditch water from Cranberry swamp Abrecon. Abundance of *Diffugia pyriformis* passing into *D. acuminata*



Also *D. spiralis*. One seen with neck of

pellets & body of stones. see drawing of date. also one covered with flat transparent plates of quartz and diatoms mostly separated by single row of

small particles, as  seen in a trilobate *Diff.* in the winter.

Large balloon-like *Arcella* with cupped surface  
Large *Euglypha alveolata* abundant.


Abrecom pond. Abundance of large *Diffugia*  
*pyriformis*, of large stims, & very common, with sacula  
seen through body of tent of grass green color.

Smaller stims near mouth 90-60-17 in the No 7



Trans. section circular, or 60 by 60.

Another more elongate form, of comparatively even  
surface, and colorless sacula except such color  
as derived from food, which usually appears yellowish

 65 long 26 broad, & 10 at mouth. Section circular

Are there two different species.

Large *Trinema acinus* and *T. globularis*.

*Euglypha alveolata*. Form seen with six long divergent  
spines to fundus thus:  as seen beneath.

*Aculla*. home like form, eight sided &  
shelving roof 47 high 45 wide, elevation of mouth 5,  
22 broad where excited. mouth 16 crenate. crenations  
about ~~ten~~ <sup>twelve</sup>, not regular. Arclae of tent about  $\frac{3}{4}$

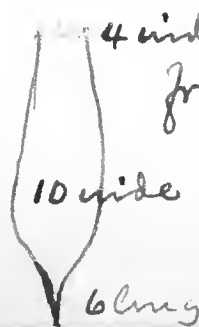
Oct. 17th *Nevela carinata* Sphagnum

Abrecom to Wales = 65-42-12 lateral view 65, 18, 7

carina 5 deep extending to within 22 of mouth. Structure of  
carina very indistinctly of minute arclae scarcely 1 diam.


Another from Abrecom pond. See drawing of date.  
viewed in the No 7 S.H.

*Euglypha*.




fragment from in Abrecom Sphagnum  
whole length 35 in the No 7 S.H.



A living *Leuconella* observed in association. Nucleus appeared uniformly granular. Abundance of *Trinema acinus* and *T. globularis*. A test of former with circular areolae having beaded outlines, in some cases where separate these beaded outlines appeared independent of one another thus: 

An apparent nucleus seen in decaying sarcocoe of *Euglypha spinosa*, 5 diam with 1000 water, uniformly granular.

*Hyalolampe* Abundant pond water 100 water 21 dir, interior body well defined 16 diam. Rings of extr. stratum 1 diam. The layer about 2% thick. Interior pale straw color with much brownish food & clear granules. Among food were three brown spores thus:  Animal slowly glided along, but failed to detect rays if such existed.

Saw several *Dif. spiralis* built of thin plates partly stroms & partly diatoms? with narrow interrupted intervals. Interruptions apparently produced by rounded clear granules.

*Actinophrys viridis*. Alueum Pond water  
Oct. 18. Body bright green, finely granular  
green with darker green balls or spots;  
28 diam. Rays moderate in number, granular  
to 40 in length. Two Cent. ves. about 6 diam.  
Body so opaque that it appeared finely granular  
yellowish green throughout to its very border  
with darker scattered green spots. (No 7 S.H.)

*Actula carinata* viewed under  $\frac{1}{10}$  Wales. The  
rete in one focus appears as a black line or  
set of lines with round or oval or other formed  
meshes shaded centrally; in another focus  
as light lines with the meshes polygonally  
round or and the borders shaded.

Saw a *Trinema acinus*, dark sienna colored.

*Euphypha spinosa*. Appeared to have a  
pale faintly granular nucleus 10 diam.  
with nucleolus 2 diam. On or within the  
nucleus were three other similar pale  
spots observable, whether nucleoli or  
exterior vesicles undetermined.

Arcella - discoid Steo, N.J.

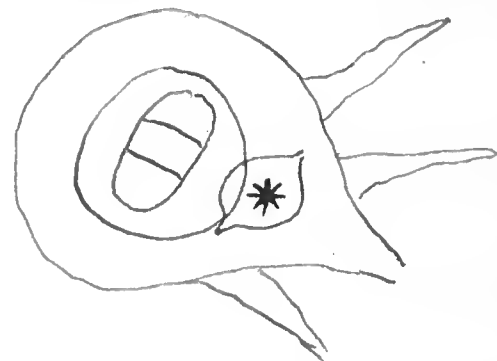


Breadth 42 height 9 elevation of mouth 3 width do 16

Arcella radisa, - occupying space of 30 by 30

contained three joints of *Didymoprium Grevillii* in a vacuole or else surrounded by slender mass of the usual gelatinous investment.

The vacuole 17 by 15. The three alga joints fresh & green 15 by 8.



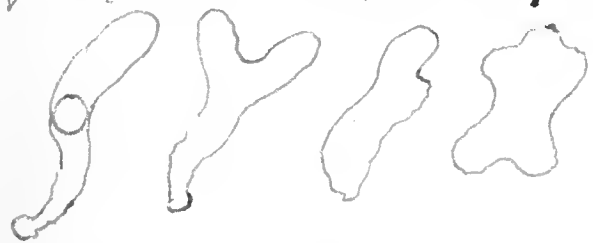
An isolated joint of the *Dis*, not enclosed in a vacuole meas. 9 dia & endochrome reduced to center of ~~an~~ small olive brownish star 5 diam. This joint was shortly after observation discharged. Other contents consisted of a number of small greenish & brownish food balls about 3 diam. Also colorless granular foodballs? same size. Four or five c.v.s around 2 or one, from 2 to 5 diam.



40 long. No 7 S.H.

1878 Jan. 5. Water with Cresses from Darby Station  
Spring, collected Dec. 1877.

A fine large Amoeba quadrilobata. Another with blines,  
A perfectly colorless Arcella, with two nuclei, opposite  
and at periphery, hemispherical 20 broad, 16 thick, (10W)  
have not produced, with 5 directions. Some colorless,  
C.V 2 to 2 1/2. Some oval 15 sitting on  
funnel of mouth, attached by threads to periphery of shell.  
Lima-like Amoeba 30 long 8 wide posterior snout 3  
to which large mass dirt adhered a cont vesicle enlarged  
from 3 to 4. Contained two directions 7 long also a number  
of crystals, apparently starch grains and nucleolar matter



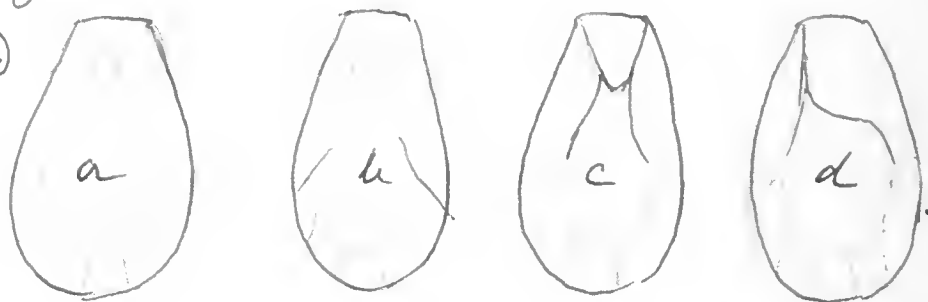
changes of form. (Near 1010W)

Supposed to be young of A. proteus. O  crystals

elongated to 35 by 8 at end. Snout not distinctly villous.  
A nucleus 2 or with halo 4 dir. At times two cont vesicles to 4  
Associated with former saw an Ostracodella testali-  
canda for which see drawing. With these also many  
small Amoebae of various forms. Also Trinema of  
several varieties, some unsymmetrical forms. Also  
Amphizonella, the double contour not visibly dotted.

See succeeding page but one of March 31.

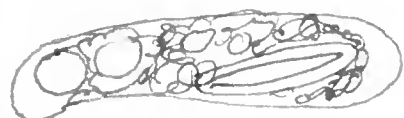
Jan. 12 *Hyalosphaeria cuneata*. In water  
from Darby station spring. See drawing of date  
Sarcule mass rare form, on disturbance detached  
itself from mouth and




retracted as in a, then  
slowly protruded again  
indrawing at end as in b. Projected one and two  
protrusions, after disturbance retracted as in c  
retaining connection with mouth by two threads, after-  
ward retracted one thread remaining connected  
by one only as in d. Nucleus 5, with five  
pale nucleoli of which three measured  $1\frac{1}{2}$  the  
others 1. Contractile vesicles two or three, close  
to nucleus and just below it laterally; expanded  
to three before collapse - all movements exceedingly  
protracted. Coarser oil like molecules just below  
nucleus, some of intermediate size seen along  
border of furrow. Length of test 26 long 20 broad, 6 thick  
5 broad at mouth. In section poles appear prolonged  
as in figure. Sarcule in this view appeared pale  
yellowish. Nucleus appears faintly granular  
and like the nucleoli.

Jan. 16, 1878 Water Darby Station. Meas. No 7 S.H.

Small Amoebeae clavate or limaciform.  
Movement with thicker end forward by  
projection of the ectosome with attendant but  
retarded inflow of the endosome.  
Movement to one side or other by projection  
of ectosome in corresponding direction.



One 20 long 7 broad, contained a  
diatome  $8 \frac{1}{2} \times 2$  with three interior endochrome masses  
enclosed in an elliptical vacuole thus:   
Cont. vesicle 2 Nucleus  $1 \frac{1}{2}$  not readily distinguishable  
from the granular spheres with it.

March 31, 1878

Same water as above. Meas. No 10 Wales.

The small limaciform Amoebeae with  
anterior villous disk. Sarcule finely granular.  
From one to ~~three~~ contractile vesicles, about 1 dia.,  
sometimes all in the villous disk, often absent for  
a time. Nucleus not present or at least not detected.  
All contained crystals, which generally held in  
advanced position, often accumulated at fore  
part, rarely contained Protococcus, though  
abundance of them about, nor did anything  
adhere to the villous disk. Nucleus from  
20 to 35 long 6, 7, 8, wide at fore part, disk 3 or 4 diam.  
Crystals  $\frac{1}{2}$  to  $1 \frac{1}{2}$  long. a large one  $1 \frac{1}{2}$  long 1 broad  $\frac{3}{4}$  thick



Some appeared as square octahedrons, others as hexagonal plates.




These Amebae appeared but little disposed to eat; they passed & repassed the Petriocci without noticing them. Occasionally an individual was seen with one in the interior green or reddish. Sometimes assumed an irregular or radiate form.

June 15, 1878. Tuft of moss from bricks in my yard, moistened and immediately examined. No 10 Wales Is.

*Trinema acinus* abundant

*Euglypha alveolata*. minute, no spines, six points to mouth, areolae of test not obvious or indistinct, animal mouth, retracted, nucleus with nucleolus generally distinct, sometimes divided up into a uniformly granular mass. Surrounded by light oil-like molecules. 8 to 10 long 5 wide 3 at mouth.


Nucleus 2<sup>h</sup> nucleolus 1. In one in which the nucleus was granular the nucleolus still remained distinct thus 

*Diffugia* cassis


*Ameba quadrilincata*

*Ameba*. minute, with a posterior duct.

Two *Ameba verrucosa* 30 & 25. At first seen completely motionless & with no pulsating vesicle, several food vacuoles & patches of food. Nucleus oval 8 by 5. Saw a third with c.v. Remained quiescent for several hours without motion. In all the



the nucleus appeared oval, granular, with more distinct and uniform granules just within the periphery, thus section appeared thus: 



One of the indiv. of quadrato from next morning was more oval and meas. (with No 75H)  $20 \times 18$  the nucleus  $5 \times 3$ , and a C.V. near it 5. Completely quiescent and during examination saw no change in size of the pulsating vesicle.

One of rather oval from next morning was  $28 \times 15$ . The nucleus  $6 \times 4$ . The contr. vesicle to which after 15 minutes had expanded to 10 

Am *A. verrucosa* seen June 16th - also quiescent & no C.V. measured  $16 \times 16$  - with No 7 - irregularly quadrato. The C.V. appeared only once & then disappeared. The C.V. appeared again in group of 2 or 4 which were quiescent, but one another.

A little *Trinema* with mouth almost terminal thus  $5 \times 2\frac{1}{2}$  oval and  $1\frac{1}{2}$  mouth, 1 inversion of do!

The little *Egghus* from the yard with 6 pairs to mouth often appear as if covered with minute rectangular plates as in Shumky's *D. Shumonianus* etc.   No 7 9-5-2  
Appear to exhibit 6 crystal rows of plates, with a No 10 in inv. could not make out the form.


*Trinema*  $9 \times 4$  (with Waler No 10) exhibited 2 p.v. about 1 div. at side of nucleus, one 13-7-3 thus  plates at side of nucleus. One seen 13-7-3 No 10 W with nucleus 3 and was compressed thus:  $7 \times 5$ . Nucleus with five nucleoli thus: .

*Diffugia caesi* of the mass of pavements, frequently  
of a decidedly yellow ferruginous hue. Abundant.

June 24, 1898 Scum of *Euglena sanguinea* & viridis  
collected from surface of inundated bog on Sch. R.  
below Grt. Garden previous day Sunday June 23.

Contained a profusion of *Arella vulgaris*, all  
shades from light amber yellow to dark  
chocolate brown. Usually 2 nuclei opposite.

a number of p.v., often air bubbles. Pseudopods  
up to 14 or more protruded at same time beyond  
lateral borders, 5 seen at once in all directions

thus , often pointed, variable in length  
& thickness. Meas. with  $\frac{1}{5}$  W.

18 toward mouth 5 dark brown, an air bubble 8

17 " " 5 " " "

18 " light dark amber. 5 ps. to 10 long

11 " 4 brown

10 " 4

16 " 4

16 " bright yellow amber with obscure

17 " 5 do do do

Nucleus with halo 2 without 1. puls. res. 2 diameter

10 wide with 4 bright yellow

16 wide " 5 brown


16 colorless - " " " " " "

Brown perfectly colorless, though all tints of raw sienna  
or amber colored to deep chocolate brown, and  
10 in breadth to 18 in breadth with mouth from 4 to 5  
to rarely 6, nearly hemispherical, even, about half  
the height of breadth, border of lower usually  
somewhat everted. Nuclei 2, pulsating vesicles  
3 to  $\frac{1}{2}$  a doz. Nucleus 3 div. with halo 4. p.v. to  
3 or 4 diam. Food contents, often from the contents  
of *Euglenia sanguinea*, especially starch-like or  
oil-like corpuscles, colorless & shining, also green  
and red granules. Occasionally a ball containing  
an entire *Euglenia viridis* usually oval in form.  
Pseudopods from 5 to 10 beyond outline; sometimes as  
many as 14 counted - digitiform, often tapering  
& even filamentous toward end; usually simple  
occasionally fuscate near base.

Shell circular in outline, rarely lunate shaped or  
bilobate.

Surv an Acella only 10 diam. with a digitiform

pseudopod 15  $\frac{1}{2}$  protruded thus

 shape on side 5 high.

A colorless one 16 diam. full of green algaous  
food; the algaous grains being from  $\frac{1}{2}$  to 1 diam.

Shell generally about half height of breadth or a  
little less.

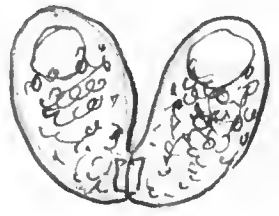
A number of the Acellae contained between the  
protoplasmic mass and the sides of the shell 2 or 3  
to ~~many~~ a dozen or more oval or elongate oval contractile  
granular, ameboid cupuncles from 2 to 3 long by  $1\frac{1}{2}$  to 1 broad,  
when round about 2 diam. Are they parasites, or reproductive  
bodies. There present in very many of the Acellae  
*Amoeba verrucosa* & its *A. quadrilincata* very abundant with  
*Ocellularia*, on mud of Zool. Garden bog.

Minute green Actinophrys 7 diam with 10 W. contractile  
chaper from, rays about equal to diam. of body, nongranular  
Another colorless 5 diam. two p.v. opposite. rays the  
twice length diam. of body. Abundant with *Hydrodictyon*.

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In moss from yard. See drawings of June 22d 1898  
Met repeatedly with animal consisting of four oval-like  
bodies associated together. more or less disk like in one  
view. Each body oval, uniformly granular, colorless,  
with a pulsating vesicle. Nucleus probably existing  
& central though not positively determined. When first seen  
the granular oval-like masses, slowly reticulated, but  
finally become sinuous, & the puls. ves. ceased  
its action or became exceedingly slow. One  
body preserved in an. cage next morning was not  
to be found, but found several acineta which  
were supposed to have been derived from it.

Aug. 18, 1878. Small *Euglypha* and *Trinema*, in great abundance in moss from yard.



Two *Trinemas* seen in conjugation thus:

Both distended with contents

*Diffugia cassis*, variable in proportion of length to breadth, sometimes uniformly constricted, sometimes broadened with heavier struts at junctions, sometimes around the mouth. Usually of a yellow color.

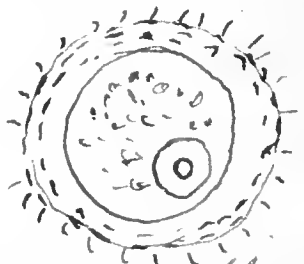
Aug. 24, 1878 With *Spirogyra* from the fountain in the garden at Fairmount. *Echinocystis*

short nail-like spines.  $\frac{1}{10}$  W. 15 diam.



Nucleus? 4 nucleolus  $1\frac{1}{4}$ . Colorless; motionless; no soft rays.

2 Another 17 diam. with an inner ball 12 a nucleus as in former, with colorless ringed with a few greenish granules.



3 A third; 16 diam. like first. nucleus only 3 with nucleolus  $1\frac{1}{4}$

4 A fourth same as the second 15 diam with inner ball 10. nucleus 4, a vacuole 4. No green col. in the ball.

5 Another 14 diam, like the preceding with inner ball 8 by  $7\frac{1}{2}$ , nucleus 3. granules colorless, a vacuole 3

6 One of 16 with an inner irregularly spherical mass resembling body of *Actinophrys*, which slowly changed form. Contained a number of vacuoles, of which several



appeared to originate & collapse on the surface. Shortly after first seen



the inner ball became regularly smooth and prominent when it appeared as in those.

Another 13 diam with inner ball of 8, nucleus 3.

Sat. June 7, 1879 Anneloid of general purplish hue. Sphagnuni. Malaya Cedar Swamp.

Spheroidal or ovoidal, stationary, very sluggish, usually emitting from one pole mostly three pseudopods, digitate, blunt or pointed, often irregular. Nearly opaque from the purplish black or ink-like hue. Has a decided purple color which appears to depend on the dark purple granules of the endosarc.

The marginal ectosarc transparent probably colorless but appears to have a pale violet tint, probably due to reflection from the purple granules of the endosarc.

The granules of the latter extend into roots of pseudopods to  $\frac{1}{3}$  or  $\frac{1}{2}$  their length. The body contains spheres &c

& materials of a pale brownish hue probably food.

but the purple granules render all else obscure. Could detect neither nucleus or cent. vesicle.

Size diameter 20 without pseudopods & nearly spheroidal as in (c)

20 by 18 with three pseudopods as in fig. 2 - 24-18 as in fig. 6

20-18 fig. d. with  $10\frac{1}{5}$  L.

1885

Aug. 15 Trip to Newport, R. I. to visit Dr. Wm. Pepper. To New York & thence by Newport boat arrive Aug. 16th 7 A.M.

Same day drive 5 m. up the coast & take sail boat 5 m. to 'West Island', resort of a fishing club. Guest of Dr. S. W. Mitchell. Island of red granulyte. Return to Newport 17th. In company with Dr. P. visit A. Agassiz laboratory.

Aug. 18 Dinner comp. with Prof. Gibbs, Jr. Wharton, Col. Waring. In evening meet Baron Osten Sacken. Aug. 19 Visit

Mr. Jos Wharton on Conanicut Island. Evening 9 p.m.

leave in Newport boat for New York & arrive Aug 20 7 a.m.

Take horse car on Broadway to 14th St. to Tiffany & Co.

Large collection diamond crystals. Kunz's sugar-like meteorite.

Take elevated rail 'Harlem train', 14th st station and

6th av. to 81st for Natural history Museum. Return

from 81st station 9th av to Courtlandt St. for home, leave

New York at 12 o'clock. 'Dr. W. Pepper 15 Greenwich Place.'

In a brook at Newport near place of leaving for West Island

observed numerous *Planaria maculata*, *Prostyla fluvialis*,

*Clepsine*, *Levins* 3 species, the curious oniscus-like larvae

of the beetle 'Psephenus'.

*Prostyla* 6 to 8 lines, milk white with brown intestine or sometimes nearly colorless.

*Planaria maculata*, mottly uniform chocolate brown above and translucent dusky whitish beneath. With a colorless spot at base of the auricle



1885

May 23. With family removed to Wallingford.

June 8th Trip to Cambridge, Md, for Cypripedium.  
Dr. Rothrock, in company, examined a tertiary  
clay and sand deposit filled with shell  
casts, barnacles & mollusks. Horizontal beds  
exposed on shore of Bay. Returned June 9th.

June 10th. Commenced Annual examination Swarthmore.  
Evening dined with C. E. Smith, Dr. Levick in company.

June 16th Commencement Swarthmore College.

June 20th On invitation of Joseph Wharton. Trip to the  
Zinc mines of Friedensville, and the Steel & Iron  
works of Bethlehem; in latter case of Surry Co. N. C.  
stone used in making zinc oxide & metallic zinc.  
Swarms of the 17 year Cicada in vicinity of Bethlehem.  
Scarcely any at Wallingford.

June 25th Trip on invitation of Dr. Hall, in company  
with other physicians to visit Surry Cottage,  
Benevolent of Frankford Asylum, at Atlantic City.  
Dr. Darrach, Hinkle, Levick, etc.

June 26th Visit to Millers at Glenfield, Media  
where the 17 year Cicada swarmed, while there  
were very few at Wallingford.

June 27th Examination of egg deposits of Cicada.  
Found to deposit eggs only in the stems of the

preceding year. Eggs arranged obliquely 0000 in two rows in the receptacle woody tissue. In two receptacles of same stem counted in each 16 eggs. In one this stem in one receptacle 14 eggs. In one of a cherry stem 24 eggs.

In ovipositing the instrument introduced in the stem obliquely downed through the bark into the wood to the depth of about half an inch. The passage is somewhat curved the instrument part being merely or quite straight. In making the receptacle the woody fibres are split apart externally, thus:



The receptacle for the eggs being & about 3 to 4 lines long.

The oviposition takes place both down and & upward,

and stones in the former direction.


The eggs laid close together, but separated laterally by increments of wood tissue.

Observed a number of Cicadas, alive and clinging to stems, entirely deprived of their abdomens.

On the ground everywhere at Idlenild and also at Littleham observed among the dead & mutilated Cicadas multitudes of isolated abdomens & Birds appear to eat the thorax and head of the males & reject the empty abdomen, appearing full air only.

1887 April 29 collected some bark fragments of pine  
with *Proctosorus viridis*, at Gloucester, N. J. Placed in  
a glass on the table. May 24<sup>th</sup> noticed on the same  
about 10 larvae of a *Proctos*, which had apparently  
hatched from eggs on the bark. May 29<sup>th</sup> Same  
observed in imago state, & preserved in alcohol.

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May 28<sup>th</sup> Received from Mr. P. Seal a few oz. pine  
with numerous Rotifers. Transparent, whitish, with  
yellow stomach. Conical, vase like, single eyed.  
from 0.375 mm to 0.5 mm long with a dorsal and  
ventral conical prominence. Occasionally retracted  
the crown and protruded a pair of lateral cones  
when animal was as broad as long.   
viviparous. Observed one give birth to  
a young like the parent and two thirds as large.  
Probably *Asplanchna Ebbesbornii*, Hudson.  
Ann. Roy. Mic. Soc. VIII 1883, 621, PL. IX, X.  
Received a letter from Mr. Hudson Aug. 4, 1887.  
declaring the above to be new species.

June 3, 1887 A peculiar looking *Taenia* submitted  
by Surgeon Preston H. Bailhache, U.S. M. H. S.

4545 Mc Kean Av. Discharged by Robt Houtchinson.

No head! In fragments as follows: 22 in., 33, 23, 7, 9,  
12, 10, 4, 4, 5,  $2\frac{1}{2}$ ; seven pieces together 8 in, nineteen large  
joints together 14 in. =  $15\frac{3}{4}$  inches.

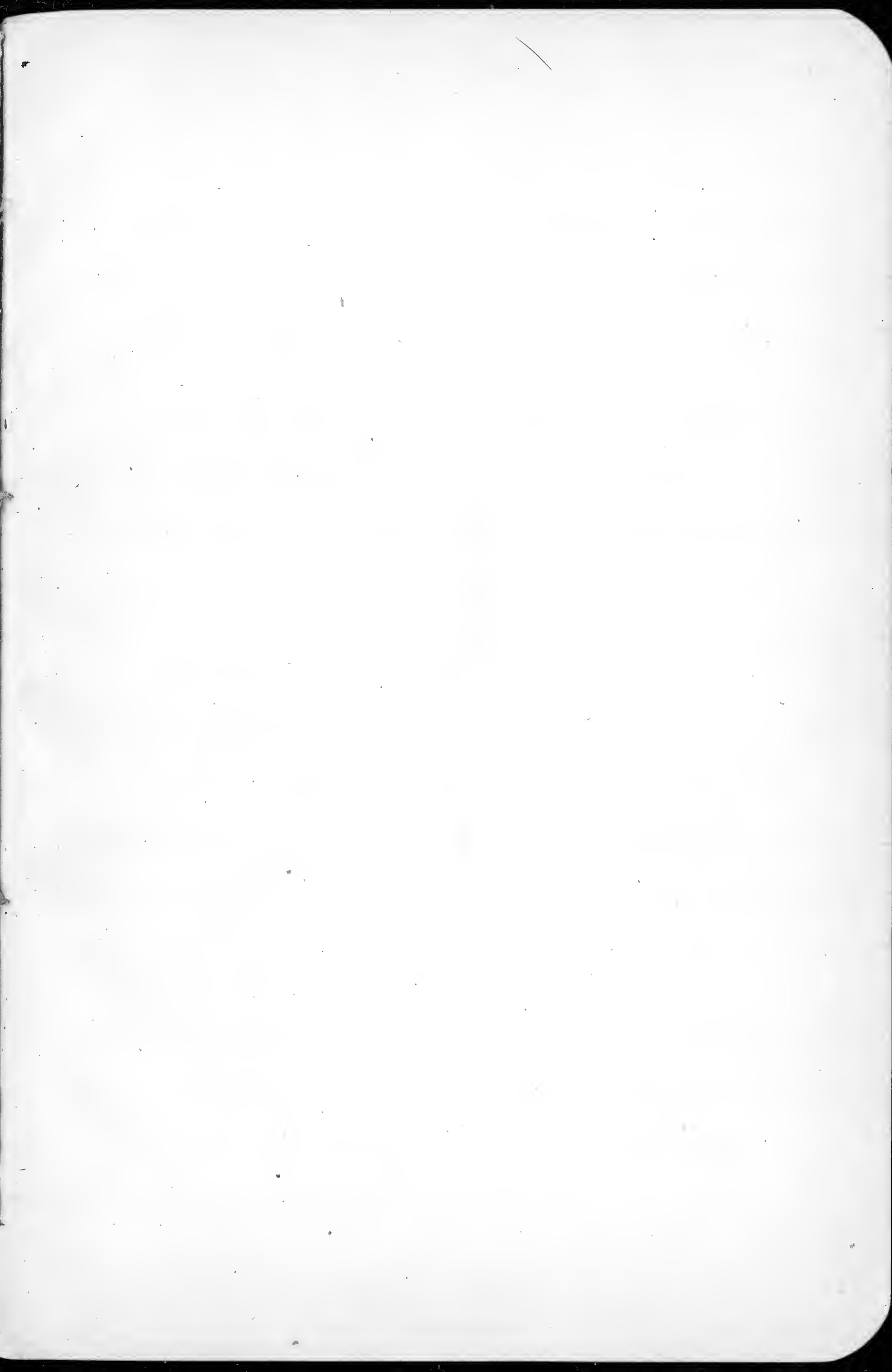
Piece of 22 inches of 32 segments from  $\frac{1}{2}$  an inch to 1 inch  
long by 1 to  $1\frac{1}{2}$  lines wide. Piece of 33 inches with  
36 segments 20 to 24 mm long by 2 mm wide.

Generative aperture marginal, near posterior third\*  
of the segment, pigmented. Or rather just posterior to the  
middle.

A piece of 3 segments measured 66 mm long. 1st joint 22 mm  
by 3 mm wide; 2d 18 mm by 2 in front & 4 behind; 3d 25 mm by 2.  
vagina pigmented.

? Is it a narrow jointed variety of *Taenia saginata*. The  
mature joints to 1 in. long by  $1\frac{1}{2}$  lines wide.





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